That which is claimed is:

1. A process for the production of fuel or blending component of fuels which are liquid at ambient conditions, which process comprises:

providing a high-boiling hydrogenation feedstock comprising a mixture of hydrocarbons and sulfur-containing organic compounds, the feedstock consisting essentially of material boiling between about 200° C. and about 425° C. and having a sulfur content up to about 2,500 ppm;

contacting the high-boiling feedstock with a gaseous source of dihydrogen at hydrogenation conditions in the presence of a hydrogenation catalyst which exhibits a capability to enhance the incorporation of hydrogen into one or more of the sulfur-containing and/or nitrogen-containing organic compounds and under conditions suitable for hydrogenation of one or more of the sulfur-containing organic compounds; and

recovering a product comprising a mixture of hydrocarbons and other organic compounds and having a sulfur content less than about 35 ppm of sulfur.

2. The process for the production of fuel or blending component of fuels according to claim 1 wherein the hydrogenation catalysts are the same or different and comprises at least one active metal, selected from the group consisting of the *d*-transition elements, each incorporated onto an inert support in an amount of from about 0.1 percent to about 20 percent by weight of the total catalyst.

3. The process for the production of fuel or blending component of fuels according to claim 1 wherein the hydrogenation catalyst comprises one or more metals selected from the group consisting of cobalt, nickel, molybdenum and tungsten.

4. The process for the production of fuel or blending component of fuels according to claim 1 wherein the recovered product contains less than about 15 ppm of sulfur.

5. A process for the production of refinery transportation fuel or blending components for refinery transportation fuel having a sulfur content less than about 15 ppm, which process comprises:

hydrotreating a petroleum distillate consisting essentially of material boiling between about 50° C. and about 425° C. and having a sulfur content up to about 25,000 ppm, by a process which includes reacting the petroleum distillate with a source of hydrogen at hydrogenation conditions in the presence of a hydrogenation catalyst to assist by hydrogenation removal of sulfur and/or nitrogen from the hydrotreated petroleum distillate, thereby producing a hydrotreated petroleum distillate having a sulfur content less than about 500 ppm;

fractionating the hydrotreated petroleum distillate by distillation to provide at least one low-boiling blending component consisting of a sulfur-lean, mono-aromatic-rich fraction having a sulfur content less than about 15 ppm, and a high-boiling feedstock consisting of a sulfur-rich, mono-aromatic-lean fraction containing the balance of the sulfur;

contacting the high-boiling feedstock with a gaseous source of dihydrogen at hydrogenation conditions in the presence of a hydrogenation catalyst which exhibits a capability to enhance the incorporation of hydrogen into one or more of the sulfur-containing and/or nitrogen-containing organic compounds and under conditions suitable for hydrogenation of one or more of the sulfur-containing and/or nitrogen-containing organic compounds;

recovering a liquid comprising a mixture of hydrocarbons and other organic compounds, and having a sulfur and/or nitrogen content less than the high-boiling feedstock; and

treating at least a portion of the recovered liquid with a solid sorbent, an ion exchange resin, and/or a suitable immiscible liquid containing a solvent or a soluble basic chemical compound, to obtain a product having a sulfur content less than about 15 ppm.

6. The process for the production of fuel or blending component of fuels according to claim 5 wherein the hydrotreating of the petroleum distillate employs at least one bed of

hydrogenation catalyst comprising one or more metals selected from the group consisting of cobalt, nickel, molybdenum and tungsten.

7. The process for the production of fuel or blending component of fuels according to claim 5 wherein the contacting the high-boiling feedstock with a gaseous source of dihydrogen employs at least one bed of hydrogenation catalyst comprising one or more metals selected from the group consisting of nickel, molybdenum and tungsten.

8. The process for the production of fuel or blending component of fuels according to claim 5 wherein the treating of recovered liquid employs at least one bed of solid sorbent comprising alumina.

9. A process for the producing a refinery transportation fuel or blending components for refinery transportation fuel having a sulfur content less than about 15 ppm, which process comprises:

providing a refinery distillate comprising a mixture of hydrocarbons, sulfur-containing and nitrogen-containing organic compounds, the mixture having a sulfur content up to about 25,000 ppm and consisting essentially of material boiling between about 200° C. and about 425° C.;

hydrotreating the refinery distillate with a source of hydrogen at hydrogenation conditions in the presence of a hydrogenation catalyst to assist by hydrogenation removal of sulfur and/or nitrogen from the hydrotreated distillate, to recover a hydrotreated distillate having a sulfur content less than about 500 ppm;

fractionating the hydrotreated distillate by distillation to provide at least one low-boiling blending component consisting of a sulfur-lean, mono-aromatic-rich fraction having a sulfur content less than about 15 ppm, and a high-boiling feedstock consisting of a sulfur-rich, mono-aromatic-lean fraction containing the balance of the sulfur;

contacting the high-boiling feedstock with a gaseous source of dihydrogen at hydrogenation conditions in the presence of a hydrogenation catalyst which exhibits a capability to enhance the incorporation of hydrogen into one or more of the sulfur-containing organic compounds and under conditions suitable for hydrogenation of one or more of the sulfur-containing organic compounds; and

recovering a high-boiling liquid having a sulfur content less than about 15 ppm.

10. The process for the production of fuel or blending component of fuels according to claim 9 wherein the hydrotreating of the refinery distillate employs at least one bed of hydrogenation catalyst comprising cobalt and one or more metals selected from the group consisting of nickel, molybdenum and tungsten, each incorporated onto an inert support in an amount of from about 0.1 percent to about 20 percent by weight of the total catalyst.

11. The process for the production of fuel or blending component of fuels according to claim 9 wherein the contacting the high-boiling feedstock with a gaseous source of dihydrogen employs at least one bed of hydrogenation catalyst comprising nickel and one or more metals selected from the group consisting of, molybdenum and tungsten, each incorporated onto an inert support in an amount of from about 0.1 percent to about 20 percent by weight of the total catalyst.

12. The process for the production of fuel or blending component of fuels according to claim 9 wherein the treating of recovered liquid employs at least one bed of solid sorbent comprising alumina.

13. The process according to claim 9 which further comprises treating at least a portion of the high-boiling liquid with a solid sorbent, an ion exchange resin, and/or a suitable immiscible liquid containing a solvent or a soluble basic chemical compound, to obtain a high-boiling product having a sulfur content less than about 10 ppm.

14. The process according to claim 13 which further comprises blending at least portions of the low-boiling blending

component and the high-boiling product to form fuel for use in compression ignition internal combustion engines, and wherein the fuel exhibits a suitable flash point of at least 38° C. as measure by ASTM D93, and contains less than 15 ppm sulfur.

15. The composition according to claim 14 wherein the fuel exhibits a suitable flash point of at least 49° C.

16. The process according to claim 9 which further comprises blending at least portions of the low-boiling blending component and the high-boiling liquid to form fuel for use in compression ignition internal combustion engines, and wherein the fuel exhibits a suitable flash point of at least 38° C. as measure by ASTM D93, and contains less than 15 ppm sulfur.

17. The composition according to claim 9 wherein the fuel exhibits a suitable flash point of at least 49° C.